Government of Western Australia
Department of Water and Environmental Regulation

Decision Report

Application for Works Approval

Part V Division 3 of the *Environmental Protection Act 1986*

Works Approval Number	W6961/2024/1
Applicant	Northern Star Resources (Carosue Dam) Pty Ltd
ACN	116649122
File number	DER2024/000396
Premises	Porphyry Gold Mine Mining tenements: M31/172, M31/30, M31/6, M31/76, M31/3, M31/4, M31/5, M31/381, M31/380, L31/45, L31/59, L31/63. As defined by the premises map in Schedule 1 of the works approval
Date of report	27/11/2024
Decision	Works approval granted

Christine Pustkuchen
Digitally signed by Christine Pustkuchen
Date: 2024.11.27 16:51:49 +08'00'

Manager, Resource Industries
an officer delegated under section 20 of the *Environmental Protection Act 1986* (WA)

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1. Decision summary

This decision report documents the assessment of potential risks to the environment and public health from emissions and discharges during the construction and operations of the premises. As a result of this assessment works approval W6961/2024/1 has been granted.

2. Scope of assessment

2.1 Regulatory framework

In completing the assessment documented in this decision report, the Department of Water and Environmental Regulation (the department; DWER) has considered and given due regard to its regulatory framework and relevant policy documents available at https://dwer.wa.gov.au/regulatory-documents.

2.2 Application summary and overview of premises

On 1 August 2024, Northen Star Resources (Carosue Dam) Pty Ltd (the applicant) submitted an application for a works approval under section 54 of the *Environmental Protection Act 1986* (EP Act). The application is in relation to the construction and time limited operations of mobile crushing and screening plant(s) operating at different locations within the Porphyry Gold Mine (the premises). The premises is located near Kookynie, approximately 135 kilometres (km) north of Kalgoorlie-Boulder in the Goldfields-Esperance region. It lies within the Shire of Menzies on Edjudina Pastoral Station and within the Yerilla District of the North Coolgardie Mineral Field. The premises is regulated under licence L8569/2011/2 originally granted in 2011 for dewatering activities. The licence was later amended to include the regulation of storage of chemicals and the operations of two landfill facilities.

The assessment of the infrastructure, equipment and associated activities outlined in this decision report and shown on the accompanying works approval (W6961/2024/1) have been assessed in accordance with *Guideline: Risk Assessments* (DWER 2020).

2.2.1 Infrastructure and operations

The proposed crushing and screening activities will occur in the areas adjacent to the Porphyry, Million Dollar, Enterprise and Wallbrook open pits (Figure 1), with the possibility of more than one crushing and screening plant operating at the premises at the same time. Ore and waste rock will feed into a three-stage mobile processing plant set on existing compacted earth hardstands. Waste rock will be sourced from the adjacent waste rock landforms while ore will be collected from Run-of-Mine (ROM) stockpiles located in the vicinity of the open pits. The plants will comprise of a jaw crusher, cone crusher with pre-screen and an additional twin deck incline screen or similar. Plant components will be fitted with water sprays to suppress dust emissions. Exact locations of the sprays could not be confirmed by the applicant as it expected that the final plants design will somewhat vary from one location to another based on the contractor engaged. Nonetheless, the applicant states that they will likely be fitted on transfer points where the risk of dust generation is highest. Dust emissions will also be managed with the use of water carts. The premises has no access to a fresh water source therefore hypersaline water will be used for dust suppression purposes. The water will be sourced from the Porphyry open pit where salinity ranges between 13,000 and 150,000 mg/L and has a pH between 5 to 8.5. Hypersaline water is already used at the premises for dust suppression purposes and is regulated under licence L8569/2011/2. Watercarts fitted with dribble bars will be used when administering water on roads and near vegetation. To prevent contaminated runoff to reach undisturbed areas existing earthen bunding will surround all plant areas.

Stockpiled material will be loaded onto the crushing and screening plant with a front loader and the same or similar vehicle will place the crushed material to an interim stockpile. The crushed

stockpiled ore will be transported to the Carosue Dam Processing plant approximately 40 km south of the premises. Crushed waste rock will remain within the premises for use in future projects and restoration.
It is anticipated that a maximum of 350,000 tonnes of gold ore and 50,000 tonnes of waste rock will be crushed and screened at the Porphyry Gold Mine per year.

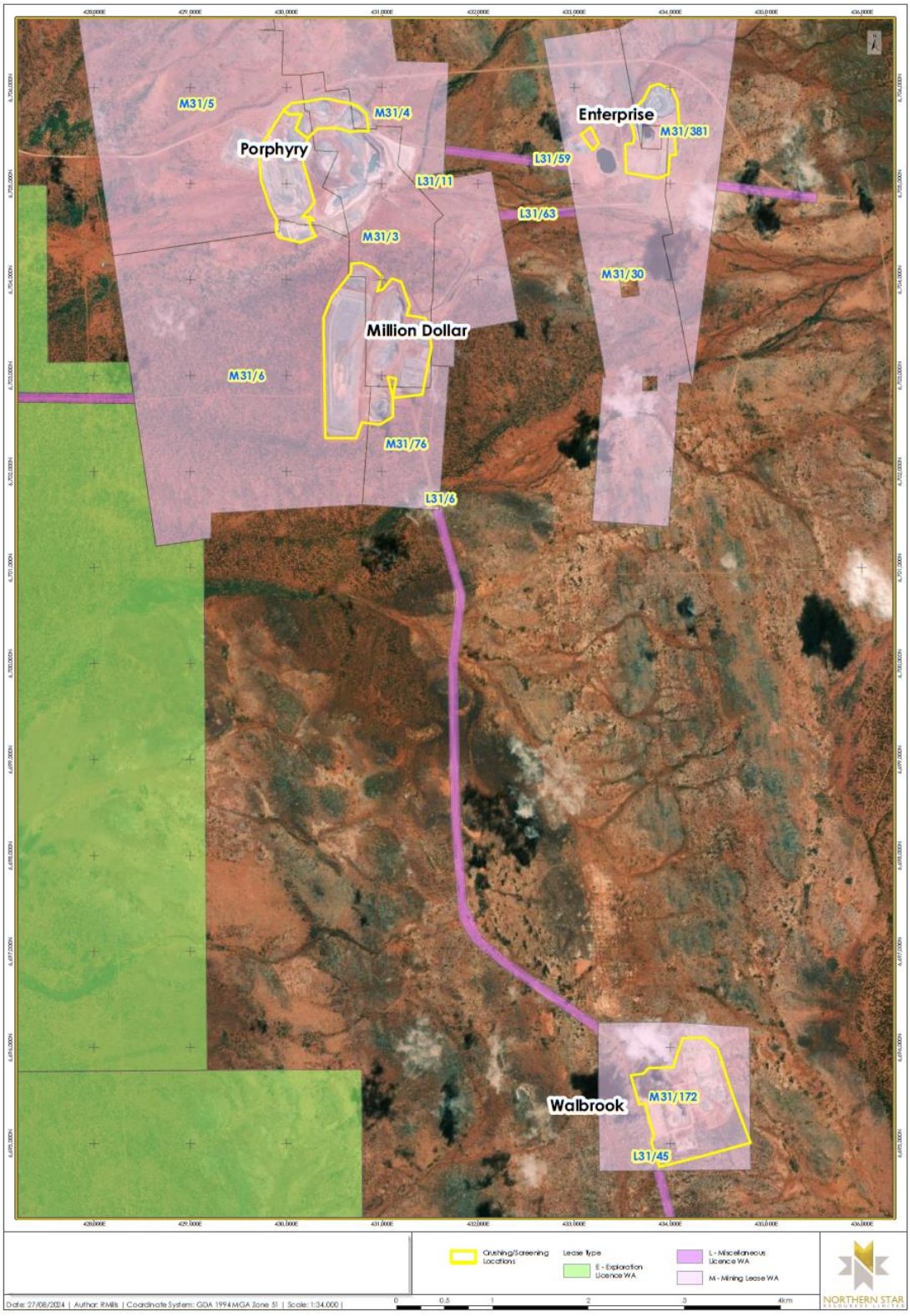

Figure 1. Location of crushing and screening activities within the premises.

2.3 Other approvals

A mining approval was granted by the Department of Energy, Mines, Industry Regulation and Safety (DEMIRS) for crushing and screening of material at the Porphyry minesite on 11 September 2023. Additional details are shown in section 4 of this report.

3. Risk assessment

The department assesses the risks of emissions from prescribed premises and identifies the potential source, pathway and impact to receptors in accordance with the *Guideline: Risk Assessments* (DWER 2020).

To establish a risk event there must be an emission, a receptor exposed to that emission through an actual or likely pathway, and a potential adverse effect to the receptor from exposure to that emission.

3.1 Source-pathways and receptors

3.1.1 Emissions and controls

Table 1 below lists the key emissions and associated actual or likely pathway during the premises construction and operation. The applicant's proposed measures to reduce these emissions are also shown.

Table 1: Emissions and proposed applicant controls

Emission	Sources	Potential pathways	Proposed controls
Construction			
Dust	Placement and installation of crushing and screening units and associated infrastructure at the premises. Vehicle movement.	Air / windborne pathway	• Use of watercart for dust suppression purposes on roads, trafficked areas and stockpiles in windy conditions.
Operation			
Dust	Crushing and screening activities, loading and unloading of material (with temporary storage) and vehicle movement.	Air / windborne pathway	• Use of watercart for dust suppression purposes on roads, trafficked areas and stockpiles in windy conditions. • Dust water sprays fitted and operated on crushing and screening plant as necessary.
Sediment laden / contaminated stormwater		Overland runoff and infiltration	• Diversion of plant runoff to containment areas away from surface water and drainage lines.
Hydrocarbon contamination of land and water sources	Heavy vehicles operations and movement	Overland runoff and infiltration	• Hydrocarbons to be stored in self-bunded storage tanks connected to fuel bowsers to minimise spillages. • Refuelling and vehicle maintenance to

Emission	Sources	Potential pathways	Proposed controls
			occur in within a bunded area of a suitable size to contain any spills and away from surface water. • Spill kits to be located at refuelling areas with operational staff being fully trained on their use. • Report any spill incident immediately. • Plant and vehicles to hold a spill kit response kit.

3.1.2 Receptors

In accordance with the *Guideline: Risk Assessment* (DWER 2020), the Delegated Officer has excluded the applicant's employees, visitors, and contractors from its assessment. Protection of these parties often involves different exposure risks and prevention strategies provided for under other state legislation.

Table 2 summarised potential human and environmental receptors that may be impacted by the emission and discharges at the premises. For the avoidance of doubt, all receptors within and surrounding the premises that may be reasonably thought of, have been listed. However, in accordance with *Guideline: Risk Assessments* (DWER 2020) where a potential pathway to exposure does not exist or is unlikely, these receptors have not been considered further on the risk assessment table (Table 3). Table 2 includes an explanation for the exclusion.

Table 2: Sensitive receptors and distance from prescribed activity

Human receptors	Distance from prescribed activity
Yarri townsite	Approximately 5 km east of the closest crushing and screening activity. Given the separation distance, the townsite is unlikely to be affected by the operations. As an actual or likely pathway does not exist this receptor has not been considered further.
Edjudina Homestead	Approximately 6 km east of the closest crushing and screening activity. Given the separation distance, the homestead is unlikely to be affected by the operations. As an actual or likely pathway does not exist this receptor has not been considered further.
Environmental receptors	**Distance from prescribed activity**
Surface water Several Ephemeral streams drain in a southwesterly direction into Lake Rebecca. Ephemeral streams most relevant to this decision report are shown below. • **Enterprise Creek and adjoining drainage line (1)**	Enterprise Creek crosses the Enterprise pit area in a north to south direction and joins the major drainage line south of the Yarry Road proceeding

Enterprise Creek is an ephemeral creek line. The drainage line consists of a semi-incised channel in a broad flood zone that forms part of a sheet wash plain.	a westerly direction.
• **Major Drainage Line (2)** This major Drainage line is subject to flooding during periods of high rainfall. The drainage line receives additional flow from a diversion bund in the eastern side of the Porphyry open pit which alters the natural volume flowing in the channel.	North of the Million dollar pit.
• **Significant Drainage line (3)** Flows southwest and along and across the Porphyry haul road	Adjacent to the Wallbrook pit.
Environmental receptors	**Distance from prescribed activity**
Groundwater Proclaimed groundwater area (Goldfields groundwater area) regulated under the *Rights in Water and Irrigation Act 1914* (Riwi Act). Groundwater in the surrounding area is mainly used for mining and pastoral purposed due to the salinity content which is approximately between 3000 and 7000 milligram per litre (mg/L).	Underlying. Groundwater is unlikely to be affected by the emissions at the premises. As an actual or likely pathway does not exist this receptor has not been considered further.
Fauna Threatened migratory species under the *Environmental Protection and Biodiversity Conservation Act 1999* (EPBC act): • *Actitis hypoleucos* (Common sandpiper) • *Calidric melanotos* (Pectoral sandpiper) • *Calidris acuminata* (Sharp-tailed sandpiper) • *Apus pacificus (Pacific swift)* • *Polytelis alexandrae (Princess parrot)*	Sitings have been recorded within and surrounding the proposed works approval footprint.
Flora Pre-European vegetation include:	
• 82 vascular flora taxa representing 45 genera across 24 families with the most diverse being Chenopodiaceae, Fabaceae, Myrtaceae. Dominant genera includes Acacia dn Maireana and Eremophila	Area adjacent to the Walbrook pit
• very sparse chenopod shrubland with some Mulga overstorey, Mulga woodland with associated *A. incurvaneura, A. tetragonophylla, A. ayersiana* and *P.*	Area adjacent to the Phorphyry pit

obovatus species • 89 vascular flora taxa from 23 families, with Chenopodiaceae and Fabaceae being the most common. Common species included: *Ptilotus obovatus* subsp. *obovatus, Maireana sedifolia, M. pyramidata, Acacia tetragonophylla and A. incurvaneura*	Area adjacent to the Enterprise pit and Million dollar pit
Cultural receptors	**Distance from the prescribed activity**
Aboriginal cultural heritage place (DPLH-099), 4705 consisting of scattered aboriginal artifacts.	Approximately 400m north of the Porphyry pit where crushing and screening activities will take place.

3.2 Risk ratings

Risk ratings have been assessed in accordance with the *Guideline: Risk Assessments* (DWER 2020) for each identified emission source and takes into account potential source-pathway and receptor linkages as identified in Section 3.1. Where linkages are in-complete they have not been considered further in the risk assessment.

Where the applicant has proposed mitigation measures/controls (as detailed in Section 3.1), these have been considered when determining the final risk rating. Where the delegated officer considers the applicant's proposed controls to be critical to maintaining an acceptable level of risk, these will be incorporated into the works approval as regulatory controls.

Additional regulatory controls may be imposed where the applicant's controls are not deemed sufficient. Where this is the case the need for additional controls will be documented and justified in Table 3.

Works approval W6961/2024/1 that accompanies this decision report authorises construction and time-limited operations. The conditions in the issued works approval, as outlined in Table 3 have been determined in accordance with *Guidance Statement: Setting Conditions* (DER 2015).

A licence is required following the time-limited operational phase authorised under the works approval to authorise emissions associated with the ongoing operation of the premises. A risk assessment for the operational phase has been included in this decision report, however licence conditions will not be finalised until the department assesses the licence application.

Table 3: Risk assessment of potential emissions and discharges from the premises during construction and operation

Risk events					Risk rating [1] C = consequence L = likelihood	Applicant controls sufficient?	Conditions [2] of works approval	Justification for additional regulatory controls
Sources / activities	**Potential emission**	**Potential pathways and impact**	**Receptors**	**Applicant controls**				
Construction								
Mobilisation and installation of crushing and screen equipment, construction of the diversion bund extension, vehicle movements.	Dust	**Pathway:** Air/windborne **Impact:** Vegetation health (smothering of photosynthesis). Abrasion / staining of artefacts as result of deposition	Native vegetation and consequently threatened fauna, artifacts scatter	Refer to Section 3.1	C = Slight L = Unlikely **Low Risk**	Y	N/A	No additional regulatory controls required.
Time limited Operation								
Crushing and screening activities, including loading and unloading, vehicle movements.	Dust	**Pathway:** Air/windborne **Impact:** Vegetation health (smothering of photosynthesis). Abrasion / staining of artefacts as result of deposition.	Native vegetation and consequently threatened fauna, artefacts scatter	Refer to Section 3.1	C = Minor L = Unlikely **Medium Risk**	Y	Condition 1, 6 and 7	Applicant's proposed controls have been conditioned on the works approval in accordance with the Guideline: Risk Assessments (DWER 2020). No additional regulatory controls required.
	Sediment laden /Contaminated	**Pathway:** overland runoff, particularly after	Soil, surface water and adjacent	Refer to Section 3.1	C = Minor L = Possible	Y	Condition 1 and 6	Applicant's proposed controls have been conditioned on the works approval in accordance

Risk events					Risk rating [1] C = consequence L = likelihood	Applicant controls sufficient?	Conditions [2] of works approval	Justification for additional regulatory controls
Sources / activities	**Potential emission**	**Potential pathways and impact**	**Receptors**	**Applicant controls**				
	Runoff	a rainfall event, infiltration **Impact:** Degradation of soil and vegetation health, contamination of surface water.	native vegetation		**Medium Risk**			with the Guideline: Risk Assessments (DWER 2020). No additional regulatory controls required.
	Hydrocarbons (from spills)	**Pathway:** overland runoff after a rainfall event, infiltration **Impact:** degradation of vegetation, degradation of surface and groundwater quality.	Adjacent native vegetation, soil, surface and groundwater water	Refer to Section 3.1	C = Minor L = Unlikely **Medium Risk**	Y	N/A	The *Dangerous Goods Safety Act 2004* regulates Hydrocarbon storage. Additionally, general provisions of the *Environmental Protection (Unauthorised Discharge) Regulations 2004* apply to the premises. No regulatory controls are required as part of the works approval.

Note 1: Consequence ratings, likelihood ratings and risk descriptions are detailed in the *Guideline: Risk Assessments* (DWER 2020).

Note 2: Proposed applicant controls are depicted by standard text. **Bold and underline text** depicts additional regulatory controls imposed by department.

4. Consultation

Table 4 provides a summary of the consultation undertaken by the department.

Table 4: Consultation

Consultation method	Comments received	Department response
The application was advertised on the department's website. Submissions closing date was 17 October 2024.	No comments were received	N/A
The Shire of Menzies was advised of proposal on 26 September 2024. A response was required by 17 October 2024.	No comments were received.	N/A
DEMIRS was advised of proposal on 26 September 2024. A response was required by 17 October 2024	DEMIRS replied on 26 September advising that a mining proposal was granted under the *Mining Act 1976* for the crushing and screening of material mined at the Porphyry Minesite (Reg ID: 119816). The mining proposal included tenements referred to, under the proposed activities. They also advised that they had no concerns with the works approval application submitted to the department.	The department has noted the comments.
The applicant was provided a draft decision report and works approval for comment on 20 November 2024.	A response was provided on 21 November 2024. The applicant requested: I. The business address on the works approval to be amended II. The premises map to be replaced with the high-resolution map provided Additional comments pertaining to the licence conditions are shown in Appendix 1 of this decision report.	The works approval was updated. The works approval was updated.

5. Conclusion

Based on the assessment in this decision report, the delegated officer has determined that a works approval will be granted, subject to conditions commensurate with the determined controls and necessary for administration and reporting requirements.

References

1. Department of Environment Regulation (DER) 2015, *Guidance Statement: Setting Conditions*, Perth, Western Australia.
2. Department of Water and Environmental Regulation (DWER) 2020, *Guideline: Environmental Siting*, Perth, Western Australia.
3. DWER 2020, *Guideline: Risk Assessments*, Perth, Western Australia.

Appendix 1: Summary of applicant's comments on risk assessment and draft conditions

Condition	Summary of applicant's comment	Department's response
Condition 1, Table 1. (b)	Condition should be removed as too specific. Make and Model of machine, components structure will vary based on contracting company.	Condition 1. Table 1. (b) has been deleted. No change to risk assessment.
Condition 6, Table 2. (c)	Condition should be removed as dribble bars are not effective on stockpiles. Stockpiles are the main source of dust emissions. Fugitive dust will be controlled with water cart cannons or improvised hose/spray mechanisms.	Condition 6, Table 2. (c) has been deleted. No change to risk assessment
-	More than one crushing and screening plant may be operating at the same time at the premises.	Condition 1, Table 1 and condition 6, Table 2 have been amended to include *crushing and screening plant(s)*. Environmental Compliance Reports for each plant must be submitted as outlined in condition 2 of the works approval.